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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/684,886	10/06/2000	John G. McDonough	TI-31698	3082

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EXAMINER

CHANG, EDITH M

ART UNIT	PAPER NUMBER
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2634

DATE MAILED: 01/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/684,886

Applicant(s)

MCDONOUGH, JOHN G.

Examiner

Edith M Chang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Oct 06 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2. 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 23-25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In the claim 23 the term "The method of claim 17 in which a demodulating finger is included" renders this claim as being indefinite. It is not defined that a method for demodulating information channels of claim 17 comprising steps includes the device of demodulating finger.

In the claim 24 the term "The method of claim 23 in which a controller is included" renders this claim as being indefinite. It is not defined that a method of claim 23 including the device of a controller.

In the claim 25 the term "The method of claim 24 in which a plurality of demodulating fingers are included" renders this claim as being indefinite. It is not defined that a method of claim 24 including devices of a plurality of demodulating fingers.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are

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such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-6, 8-9, 11-15, 17-21, 23-24, 26, & 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Secord et al. (US 6097712) in view of Spock (US 5903550).

Regarding **claim 1, 11, 17, 21 & 23-24** except explicitly specify the soft symbol provided by the finger, Secord et al. discloses all subject matter claimed: a system/the demodulating finger with methods for demodulating information channels in a plurality of sample streams in a direct sequence spread spectrum (DSSS) communications receiver. It comprises: a controller having an output to select a sample stream (42-44 Fig.4 & 52-54 Fig.5/6 composed the controller); and a plurality of demodulation fingers (column 5 lines 15-20, 50 Fig.4 can have a plurality of fingers), each demodulating finger having a sample stream input to accept the plurality of sample streams (input 52 Fig.5/6 is the sample stream input), a selection input connected to the controller output to accept sample stream selection commands (first input of 54 Fig.5/6 is the selection input, $\omega/\Delta\omega/W(i,k)$ Fig.5/6, are commands to select the sample stream). However Spock teaches the soft symbol of the decoding in the demodulating fingers information channel (FIG.2, 268-272 FIG.7, column 9 lines 20-30). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the demodulating and decoding taught by Spock in Secord et al.'s rake receiver to despread and decode the received DSSS signal into soft symbols from the uncovered/demodulated information channel efficiently for permitting reallocation of demodulation resources and reducing circuitry requirement (column 2 line 65-column 3 lines 2) for multiple information sources.

Regarding **claims 2 & 12**, Secord et al. discloses a MUX (52-54 Fig.5/6 is the MUX) having a first input connected to the finger sample stream input to accept the plurality of sample

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streams (where the A, B, or C accepted on input of the 52 in Fig.5/6 which is the first input of the MUX), a second input connected to the finger selection input to accept selection commands ($W(i,k)$ input of 54 Fig. 5/6 is the second input of the MUX).

Regarding **claims 3, 13 & 18**, Secord et al. discloses a plurality of finger channels (column 4 lines 17-25), a code input to accept an uncovering code (52 Fig.5/6, $c(i,k)$ is the uncovering code). With Spock's soft symbol decoding in the demodulating finger implementation teaching in the Secord et al.'s finger, the Secord et al.'s demodulating finger channel in response to the accepted uncovering code provides soft symbols. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the demodulating and decoding taught by Spock in Secord et al.'s rake receiver to despread and decode the received DSSS signal efficiently for permitting reallocation of demodulation resources and reducing circuitry requirement (column 2 line 65-column 3 lines 2) for multiple information sources.

Regarding **claims 4 & 14**, Secord et al. discloses a code generator having an output to provide uncovering codes; and each demodulating finger includes a code input connected to the code generator; and the code input of each finger channel is connected to the demodulating finger code input (column 3 line 65-column 4 line 25, 52 Fig.5/6, where the $c(i,k)$ is the uncovering code).

Regarding **claims 5, 15 & 26**, Secord et al. discloses the plurality of sample streams are converted from a plurality of accepted carriers; and each demodulating finger accepts sample streams converted from the plurality of carriers. (Abstract, Fig.4-6, Fig.3 shows the multiple carriers).

Regarding **claim 6**, Secord et al. discloses selecting a sample stream for each of the demodulating fingers from the plurality of sample streams (Fig.4, Fig 5-6 by selecting ω_c and $W(i,k)$).

Regarding **claim 8**, Secord et al. discloses the controller assigning a first sample stream, from the first carrier, to a first demodulating finger; and to a second finger. When the controller assigning ω_c to two fingers, the first and the second (Fig.4, Fig.5-6, when $\Delta\omega$ is not provide as a single carrier in column 1 lines 22-30).

Regarding **claim 9**, Secord et al. discloses the controller assigning the sample stream from the first carrier to a third finger from the plurality of demodulating fingers (Fig.5-6, when $\Delta\omega$ is not provide as a single carrier in column 1 lines 22-30).

Regarding **claims 19 & 20**, Secord et al. discloses accepting the Walsh code and uncovering the information channel with the Walsh code (54 $W(i,k)$ Fig.5/6, column 5 lines 40-43).

Regarding **claim 28**, Secord et al. discloses the method and the controller assigning a first, second, and third carrier a first sample stream, from the first carrier, to a first demodulating finger, and to a second finger. When the controller assigning ω_c to two fingers, the first and the second (Fig.4, Fig.5-6, when $\Delta\omega$ is not provide as a single carrier in column 1 lines 22-30); and a first, second, and third sample stream accepted by a first and second demodulating finger (Fig.5/6 where ω_c and $\Delta\omega$ are provided).

5. Claims 10, & 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Secord et al. (US 6097712) in view of Spock (US 5903550) as applied to claim 9 above, and further in view of Kuo (US 6507604).

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Regarding **claims 10, & 29**, further Kuo teaches a first and second multipath delays (FIG.1b where the different delays transmitted, FIG. 2 each finger with the delay, FIG.3a where each demodulator for each delay path). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the demodulator for multipath delay taught by Kuo in Secord et al.'s finger to have one finger to handle the first sample stream first multipath delay and the second finger to handle the second delay to improve the performance of a wireless receiver having a plurality of signals (column 1 lines 45-50).

6. Claims 7, 16, 22, 25 & 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Secord et al. (US 6097712) in view of Spock (US 5903550) as applied to claims 6 & 15 above, and further in view of Oishi et al. (US 6563859).

Regarding **claims 7, 16, 22, 25 & 27**, further Oishi et al. teaches assigning a first sample stream from the first carrier to a first demodulating finger, a second sample stream from the second carrier to a second demodulating finger and a third sample stream from the third carrier to a third demodulating finger, and selecting each sample stream from the plurality of sample streams (FIG.2, column 4 lines 40-60 wherein the complex filter demultiplexes a specified carrier signal; column 7 lines 38-45, FIG.8/9 where one signal of each carrier ($f_1 \dots f_k$) assigned to one finger). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the selector taught by Oishi et al. to assign each finger performing on a signal of a carrier in Secord et al.'s system with Spock's soft symbol teaching to detect and demodulate plurality of carries simultaneously and have a efficient operation and circuit (column 3 lines 4-15).

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Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edith M Chang whose telephone number is 703-305-3416. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 703-305-4714. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4800.

Edith Chang
January 2, 2004

Chieh M. Fan
**CHIEH M. FAN
PRIMARY EXAMINER**